

THE EFFECT OF A NEARBY POLYNIA ON THE AIR  
TEMPERATURE AT SYOWA STATION, EAST  
ANTARCTICA (Abstract)

Nobuo ONO

*The Institute of Low Temperature Science, Hokkaido University,  
Kita-19, Nishi-8, Kita-ku, Sapporo 060*

The influence of multi-year fast ice around Syowa Station on the local climate has been studied with the data of a special case when a large polynya appeared near the station. The shore fast ice around Syowa Station, which is located on East Ongul Island (69°00'S, 39°35'E), was fractured by the action of swell from an offshore open sea on March 18, 1980. The ice close to the island never broke until this case since Syowa Station was established in 1957.

The monthly mean air temperatures at Syowa Station in the subsequent several months of the year were higher than the average values of more than twenty years. The magnitude of the warm anomaly of each month was about 2.5 degrees in March, about 4 degrees from April to July, and about 2 degrees in August and September. According to the climatological data at Syowa Station, warm anomalies during twenty years or more never exceeded 2.5 degrees from January to May, in the austral summer and fall seasons, except the year 1980. The warm anomalies in 1980 continued through the period of rapid growth of ice in the polynya. New ice covered the polynya in the end of April, and the thickness of ice increased as 55 cm in the beginning of June, 85 cm in the end of July, 105 cm in the end of September, and 115 cm in early November. It is recognized as the air temperature at Syowa Station was affected by the latent heat release of ice formation in the nearby polynya.

*(Received April 5, 1984)*

PROFILING OF ANTARCTIC SEA ICE THICKNESS AND  
RELEVANT SEA ICE STRUCTURE NEAR SYOWA  
STATION BY IMPULSE RADAR (Abstract)

Hirokazu OHMAE<sup>1</sup>, Fumihiko NISHIO<sup>2</sup>, Masao ISHIKAWA<sup>1</sup>,  
Shuhei TAKAHASHI<sup>3</sup> and Takayoshi KATSUSHIMA<sup>4</sup>

<sup>1</sup>*The Institute of Low Temperature Science, Hokkaido University,  
Kita-19, Nishi-8, Kita-ku, Sapporo 060*

<sup>2</sup>*National Institute of Polar Research, 9-10, Kaga 1-chome, Itabashi-ku, Tokyo 173*

<sup>3</sup>*Kitami Institute of Technology, 165, Koen-cho, Kitami 090*

<sup>4</sup>*Faculty of Science, Hokkaido University, Kita-10, Nishi-8, Kita-ku, Sapporo 060*

Using impulse radar on Antarctic sea ice near Syowa Station, sea ice thickness was profiled and relevant sea ice structure studied in August 1982. The impulse radar system consisted of two transmitter-receiver antennae, a control unit and a graphic display recorder. Operating frequencies were on the order of 300 and 500 MHz.